

Quick Reference: Symptom Lookup

Use this table to quickly identify the most likely cause and fix for common symptoms. For detailed procedures, see the corresponding section below.

| Symptom | Likely Cause | Quick Fix | Est. Time |
|---------------------------|-------------------------------------|----------------------------------|-----------|
| Pressure drops mid-cycle | Clogged inlet filter | Replace filter element | 15 min |
| Pump making whining noise | Air in hydraulic fluid (cavitation) | Bleed system, check fluid level | 30 min |
| Slow ram descent | Low fluid level or viscosity | Top off fluid, check temperature | 10 min |
| Ram drifts when stopped | Leaking control valve | Replace valve seals | 45 min |
| Fluid overheating | Cooler fan failure or dirty fins | Clean fins, verify fan operation | 20 min |
| Uneven pressure L/R | Cylinder seal wear | Replace cylinder seals | 2 hrs |
| Error code E-47 | Proximity sensor misaligned | Realign sensor, check gap | 10 min |

Equipment Overview

| Parameter | Value |
|----------------------|---|
| Machine | Greenerd H-Frame Hydraulic Press |
| Capacity | 50 Tons |
| Serial Number | GH-50-29847 |
| Location | Building 2, Station 7 |
| Year Installed | 2019 |
| Hydraulic System | 20-gallon reservoir, 3000 PSI max |
| Fluid Type | AW-46 Hydraulic Oil |
| Maintenance Interval | 500 hours or 3 months (whichever first) |

[IMAGE: Full machine overview - Greenerd H-Frame 50-ton press with control panel visible]

Problem 1: Pressure Drops Mid-Cycle

Symptom Description

The press begins its cycle normally but loses pressure partway through the stroke. The operator may notice the ram slowing down, the pressure gauge dropping below the programmed value, or the workpiece not being fully formed. This is the most common issue on this machine, accounting for approximately 60% of unplanned downtime.

Diagnosis Flowchart

Follow this decision tree to narrow down the root cause:

| Step | Check | If YES | If NO |
|------|--|---|--------------|
| 1 | Is fluid level low in sight glass? | Top off fluid and retest | Go to Step 2 |
| 2 | Is fluid dark brown or smells burnt? | Drain and replace fluid | Go to Step 3 |
| 3 | Is inlet filter indicator in RED zone? | Replace filter (see below) | Go to Step 4 |
| 4 | Any visible hose leaks under press? | Tighten fitting or replace hose | Go to Step 5 |
| 5 | Does pressure hold when ram is static? | Check control valve (call maintenance) Pump may be failing (escalate) | |

■ EXPERT TIP: Pressure drops are 90% of the time a filter issue. Check the filter FIRST before investigating more complex causes. It saves the most time.

Root Cause #1: Clogged Inlet Filter (Most Common)

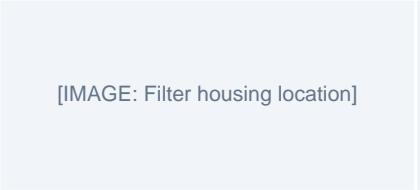
- 1** **SHUT DOWN** the press and engage lockout/tagout per facility procedure.
- 2** **LOCATE** the inlet filter assembly on the left side of the reservoir (behind the access panel).
- 3** **PLACE** a drain pan below the filter housing to catch any fluid.
- 4** **REMOVE** the filter housing cap using the 1-1/4" wrench. Turn counterclockwise.
- 5** **EXTRACT** the old filter element. Note the condition — if it's dark and clogged with metal particles, this indicates upstream component wear.
- 6** **INSPECT** the housing interior. Wipe clean with a lint-free towel. Check the O-ring seat for damage.
- 7** **INSTALL** new filter element (Part #: GR-50-FL-010). Ensure it seats fully in the housing.
- 8** **REPLACE** the O-ring if damaged (Part #: GR-50-OR-003). Lubricate with a thin film of hydraulic oil.

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REINSTALL the housing cap. Torque to 25 ft-lbs. Do not overtighten.

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REMOVE lockout/tagout. Start the press and run 3 idle cycles to verify pressure holds.

 [IMAGE: Filter housing location] [IMAGE: Clogged vs. new filter] [IMAGE: Correct O-ring seat]

■ **WARNING: Always engage lockout/tagout before opening the filter housing. The system retains residual pressure even when the press is off. Failure to lock out can result in sudden fluid release under pressure. Required PPE: Safety glasses, nitrile gloves.**

Safety Warnings & Hazards

■ **WARNING: Hydraulic Pressure:** System operates at up to 3000 PSI. Never loosen fittings while system is pressurized. Always depressurize and lock out before service.

■ **WARNING: Pinch Points:** The ram and die area present severe crushing hazards. Never place hands or body parts in the press area during operation.

■ **WARNING: Hot Fluid:** Hydraulic fluid can reach 150°F during extended operation. Allow cooling time before draining or opening reservoirs.

■ **WARNING: Fluid Contact:** AW-46 hydraulic oil is a skin irritant. Wear nitrile gloves when handling. If contact occurs, wash with soap and water.

■ **WARNING: Noise:** Pump operation exceeds 85 dB. Hearing protection required within 10 feet of operating press.

Required Parts & Tools

| Part/Tool | Part Number | Qty | Location |
|--------------------------|-----------------|-------|------------------------|
| Inlet filter element | GR-50-FL-010 | 2 | Parts crib, Bin H-14 |
| Filter housing O-ring | GR-50-OR-003 | 4 | Parts crib, Bin H-14 |
| AW-46 Hydraulic Oil | SHELL-AW46-5GAL | 1 | Fluid storage, Bay 3 |
| Fluid test strips | HYD-TEST-100 | 1 box | QC cabinet |
| 1-1/4" wrench | N/A | 1 | Tool cart, Drawer 3 |
| Drain pan (5 gal) | N/A | 1 | Under press, left side |
| Lint-free towels | N/A | 10 | Dispenser at station |
| Torque wrench (25 ft-lb) | N/A | 1 | Tool cart, Drawer 1 |

Preventive Maintenance Schedule

| Task | Frequency | Performed By |
|------|-----------|--------------|
| | | |

| | | |
|---------------------------------|------------------------------|-------------|
| Check fluid level (sight glass) | Daily (start of shift) | Operator |
| Check fluid color and odor | Weekly | Operator |
| Inspect hoses for leaks/wear | Weekly | Operator |
| Replace inlet filter | Every 500 hours | Technician |
| Full fluid change | Annually or at contamination | Technician |
| Cylinder seal inspection | Every 2000 hours | Maintenance |
| Pump pressure test | Every 1000 hours | Maintenance |
| Cooler fan and fin cleaning | Monthly | Operator |

This document was generated using the Manufacturing Flow Machine Troubleshooting skill. It demonstrates the typical output format: cover page, quick-reference symptom table, equipment overview, detailed troubleshooting sections with decision flowcharts, step-by-step repairs, image placeholders, safety warnings, parts lists, and maintenance schedules.